

[0016] Further, there is a problem that each EL sheet does not have the identical shape. Although the third prior art solution adopts the identical EL sheets, the ends of the EL sheets need to be "cut off" in accordance with positions in which the EL sheets are arranged. In the third prior art solution, concrete examples are variously introduced. However, in view of the lighting unit manufactured, each sheet has a different shape. That is, the shape (structure) of the EL sheet needs to be changed in accordance with the positions in which the EL sheets are arranged. Therefore, the EL sheets of the third prior art solution need to be manufactured by arranging a plurality of sheets, whose shapes are substantially different, in predetermined positions and by combining them.

[0017] For the manufactured lighting unit, in a case where one EL sheet or a plurality of EL sheets is exchanged, the sheet having the identical shape to that of the original sheet needs to be prepared.

SUMMARY OF THE INVENTION

[0018] The present invention is directed to a lighting unit which reduces differentials of brightness in a space between panels and brightness in another place.

[0019] The present invention provides a first lighting unit. The first lighting unit includes a plurality of panels and a light scattering means. The panels are arranged adjacently. Each panel has a transparent substrate and an electroluminescent element that is provided on the transparent substrate. Each panel also has end faces. The adjacent panels are arranged so that the end faces thereof face each other. The light scattering means is interposed between at least the end faces of the adjacent panels.

[0020] The present invention also provides a second lighting unit. The second lighting unit includes a plurality of panels and a light scattering structure. The panels are arranged adjacently. Each panel has a transparent substrate, which has on opposite sides thereof a light exit surface and a light incidence surface. Each panel also has an electroluminescent element that is provided on the light incidence surface of the transparent substrate. Each panel further has end faces. The light exit surfaces or the light incidence surfaces are positioned roughly in the identical plane. Each electroluminescent element is located so as to exist on the same side relative to the plane. The light scattering structure is provided on the end face of each transparent substrate, thereby extracting the light that is emitted from the electroluminescent element from a side of the light exit surface to an outside of the lighting unit.

[0021] The present invention further provides a third lighting unit. The third lighting unit includes a plurality of panels. The panels are arranged adjacently. Each panel has a transparent substrate, which has on opposite sides thereof a light exit surface and a light incidence surface. Each panel also has an electroluminescent element that is provided on the light incidence surface of the transparent substrate. Each panel further has end faces. The light exit surfaces or the light incidence surfaces are positioned roughly in the identical plane. Each electroluminescent element is located so as to exist on the same side relative to the plane. The third lighting unit also includes a scattering member provided on a side of the light exit surface of the transparent substrate and/or uneven portions formed on the light exit surface.

[0022] Other aspects and advantages of the invention will become apparent from the following description, taken in conjunction with the accompanying drawings, illustrating by way of example the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] The features of the present invention that are believed to be novel are set forth with particularity in the appended claims. The invention, together with objects and advantages thereof, may best be understood by reference to the following description of the presently preferred embodiments, together with the accompanying drawings, in which:

[0024] FIG. 1 is a schematic sectional view illustrating a lighting unit according to a first preferred embodiment of the present invention;

[0025] FIG. 2 is a schematic plan view illustrating the lighting unit according to the first preferred embodiment of the present invention;

[0026] FIG. 3 is a schematic sectional view illustrating a lighting unit according to a second preferred embodiment of the present invention;

[0027] FIG. 4 is a schematic plan view illustrating the lighting unit according to the second preferred embodiment of the present invention;

[0028] FIG. 5 is a schematic sectional view illustrating a lighting unit according to a third preferred embodiment of the present invention;

[0029] FIG. 6 is a schematic plan view illustrating the lighting unit according to the third preferred embodiment of the present invention;

[0030] FIG. 7 is a schematic sectional view illustrating a lighting unit according to a fourth preferred embodiment of the present invention; and

[0031] FIG. 8 is a schematic plan view illustrating the lighting unit according to the fourth preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0032] A lighting unit according to a first preferred embodiment of the present invention will now be described with reference to FIGS. 1 and 2. FIG. 1 is a schematic sectional view illustrating the lighting unit according to the first preferred embodiment of the present invention. FIG. 2 is a schematic plan view illustrating the lighting unit according to the first preferred embodiment of the present invention.

[0033] First, the structure of the lighting unit will be described. As shown in FIG. 2, a lighting unit 10 is formed by arranging a plurality of panels 11 and by joining them. In the present embodiment, the number of panels 11 which have roughly the same structure is nine, and the nine panels 11 are arranged in the shape of a matrix of three rows and three columns. The adjacent panels 11 are joined to each other by a congealed member (an adhesives) 12 that serves as a light scattering means so that at least transparent substrates of the adjacent panels 11 are respectively joined to each other.